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an incomplete set of dNTPs in the absence of ddNTPs, under suitable conditions for obtaining one or more extension products of the primer wherein said one or more extension products are terminated in the presence of at least two mispairs within a 2 to 4 base pair range located downstream of the 3' end of the primer; and wherein at least one of the primer or the dNTPs is labeled;

- b) characterizing the extension products; and
- c) analyzing the characterized extension products based on primer-specific pairing and non-specific pairing to determine the genotype of the nucleic acid sequence extended.

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**Claim 17 (Amended)**

The primer-specific and mispair extension assay of claim 1 wherein said at least two mispairs are created immediately following one correct pairing at the position immediately adjacent to said 3' end of the primer.

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Please add new claims 18-22, as set forth below:

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**Claim 18 (New)**

The primer-specific and mispair extension assay of claim 1 wherein said at least two mispairs are separated by one or two correct pairings.

**Claim 19 (New)**

The primer-specific and mispair extension assay of claim 1 wherein said at least two mispairs are consecutive mispairs.

**Claim 20 (New)**

A primer-specific and mispair extension assay for determining genotype, said assay comprising:

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- a) extending a nucleic acid sequence from a patient sample with pfu DNA polymerase, using a primer-specific for a genotype to be determined, and
  - an incomplete set of dNTPs in the absence of ddNTPs, under suitable conditions for obtaining one or more extension products of the primer wherein an extension product is prevented when a mispair occurs at at least one of a first or second base pair immediately adjacent to the 3' end of the primer; and wherein at least one of the primer or the dNTPs is labeled;
- b) characterizing the extension products; and
- c) analyzing the characterized extension products based on primer-specific pairing and non-specific pairing to determine the genotype of the nucleic acid sequence extended.

**Claim 21 (New)**

The primer-specific and mispair extension assay of claim 1 further comprising:

- d) generating a genotype-specific extension profile of the extension products.

**Claim 22 (New)**

The primer-specific and mispair extension assay of claim 20 further comprising:

- d) generating a genotype-specific extension profile of the extension products.